NCT75-175-275GEVB

NCT75-175-275 Evaluation Board User's Manual

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EVAL BOARD USER'S MANUAL

About This Manual

This manual will enable the user to use NCT75−175−275 Evaluation Board to evaluate functional performance of the following ON Semiconductor devices.

- NCT75
- NCT175
- NCT275

These devices can be tested either by soldering them on the board or by using a dedicated daughter card for that device. Footprints of different packages are provided and marked for different package options of these devices. Similarly a DIP socket is also provided to facilitate the use of dedicated daughter cards. The device's features are tested by using a digital interface cable along with the supported software. The test results should be taken to judge the device functional performance according the specification in the technical datasheet.

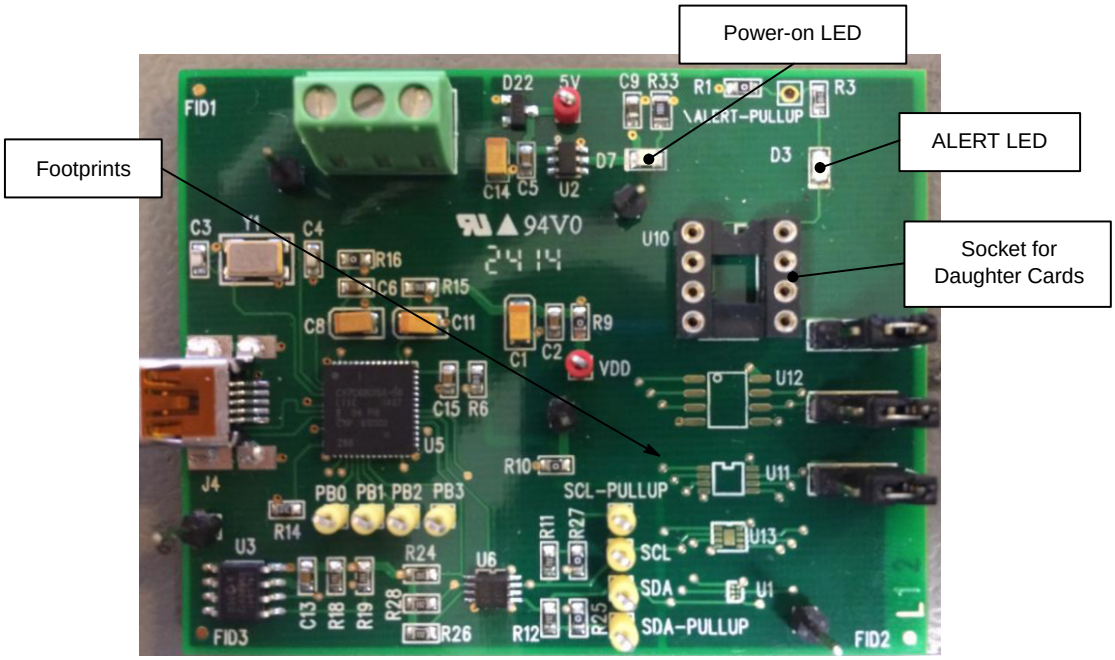

Figure 1. NCT75−175−275 Evaluation Board Showing the Footprints and the 8-pin DIP Socket for the Daughter Cards

Power & ALERT LEDs

NCT75−175−275 board is powered up by a 3.3 V internally generated power supply. The board is designed in such a manner that devices's fucntionality can be tested without the need of an externally supplied power (other than USB 5 V). Green LED D7 shows that a 3.3 V is available. In order to display any out of limit condition a red colored ALERT LED D3 is provided on the board.

Address Selection

NCT75 & NCT175 are available with 9 possible addresses as they have three address pins A0, A1 and A2 respectively. NCT275 is available in two possible addresses with one address pin A1. Links LK7, LK1 & LK2 corresponds address selection of A0, A1 and A2 respectively.

The possible address options for NCT75/175 are shown in Table 1.

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Table 1. NCT75/175 SMBUS ADDRESS OPTION

A2	A1	A0	Address
0	0	0	0x48
0	0	1	0x49
0	1	0	0x4A
0	1	1	0x4B
1	0	0	0x4C
1	0	1	0x4D
1	1	0	0x4E
1	1	1	0x4F

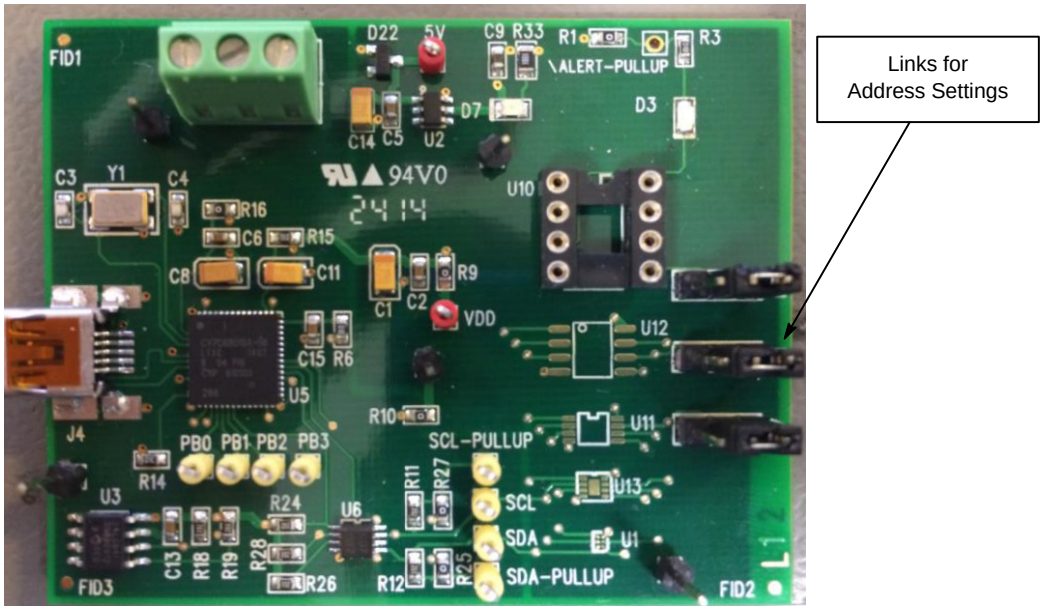

Figure 2. Links for Address Settings

The possible address options for NCT275A/B are shown in Table 2 & Table 3 respectively.

The default position of address selection links on NCT75−175−275 board is 000.

Table 2. NCT275A SERIAL BUS ADDRESS OPTIONS

Ball B1	I²C Address
0	0x49
1	0x4B

Table 3. NCT275B SERIAL BUS ADDRESS OPTIONS

Ball B1	I²C Address
0	0x48
1	0x4A

Daughter Card for NCT275

The daughter card assembly for NCT275 consists of two PCBs as follows:

1. NCT75−CSP−EDGE−BOARD

Figure 3. NCT75−CSP−EDGE−BOARD

2. BOARD with a SULLENs socket for the EDGE Board and the 8-pin DIP connector for the mother board interface.

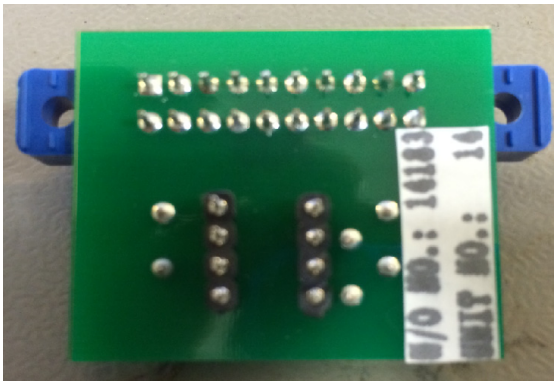

Figure 4. SULLENS Board Showing the DIP−8 Connector

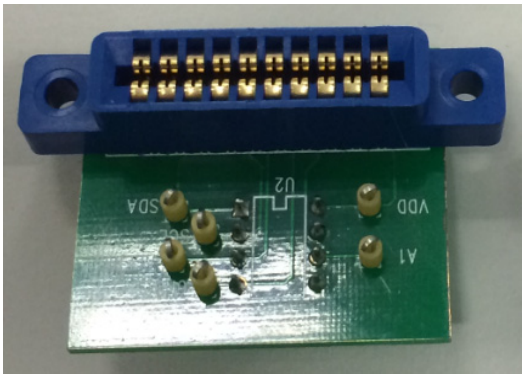

Figure 5. SULLENS Board Showing the Socket for CSP Board

The photograph of the complete daughter card assembly for NCT275 is show below. Please note the correct orientation of CSP board in to the SULLENs connector.

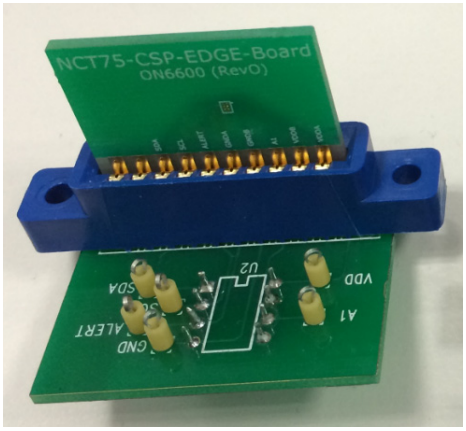

Figure 6. NCT−275 Daughter Card Assembly

The daughter card assembly is now ready to be plugged in to the NCT75−175−275 board. The picture of the said setup is shown in Figure 7.

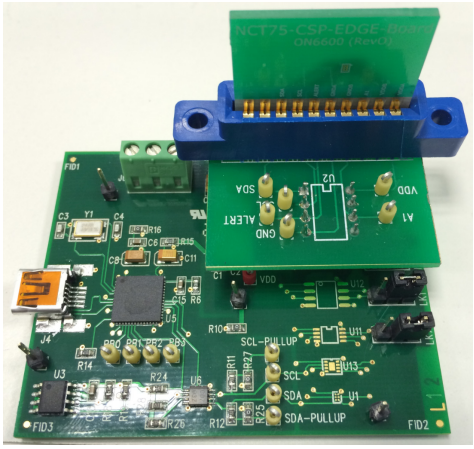

Figure 7. NCT−275 Test Setup

Evaluation Software

An installable software file NCT75_x64_v1.0.0 is provided. Install this file which will copy all the necessary drivers and hex files in the user system. For now this software is only installable on a 64bit operating system. After installation double click the *NCT75.exe* file to run the software. As the software runs the following window will be displayed:

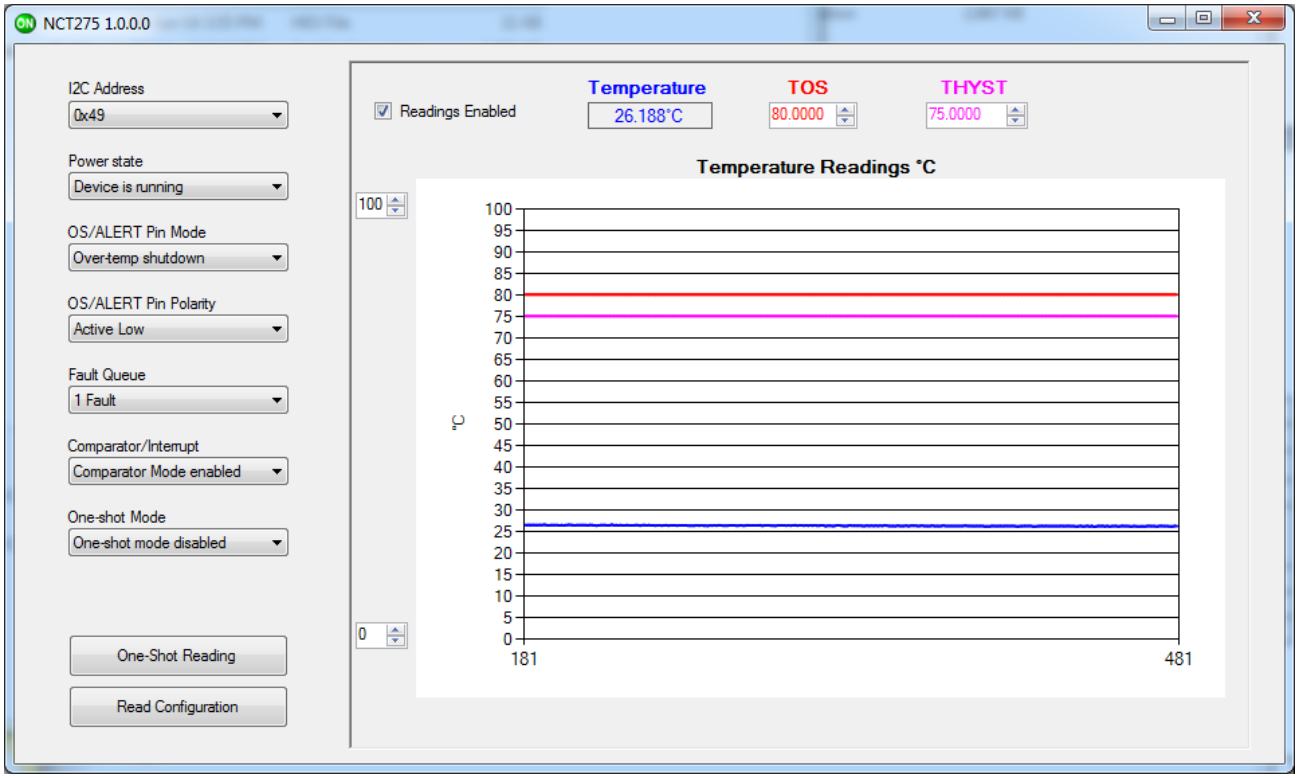

Figure 8. GUI of the NCT75−175−275 EVB Software

The software displays three readings at the top namely Temperature, TOS and THYST respectively. Numeric up down menus is provided with OS and THYST to dynamically change these values. The graphs will follow the readings in these displays. The left hand side of the window displays different tabs for the setting of different device parameters.

EVALUATION BOARD SCHEMATIC

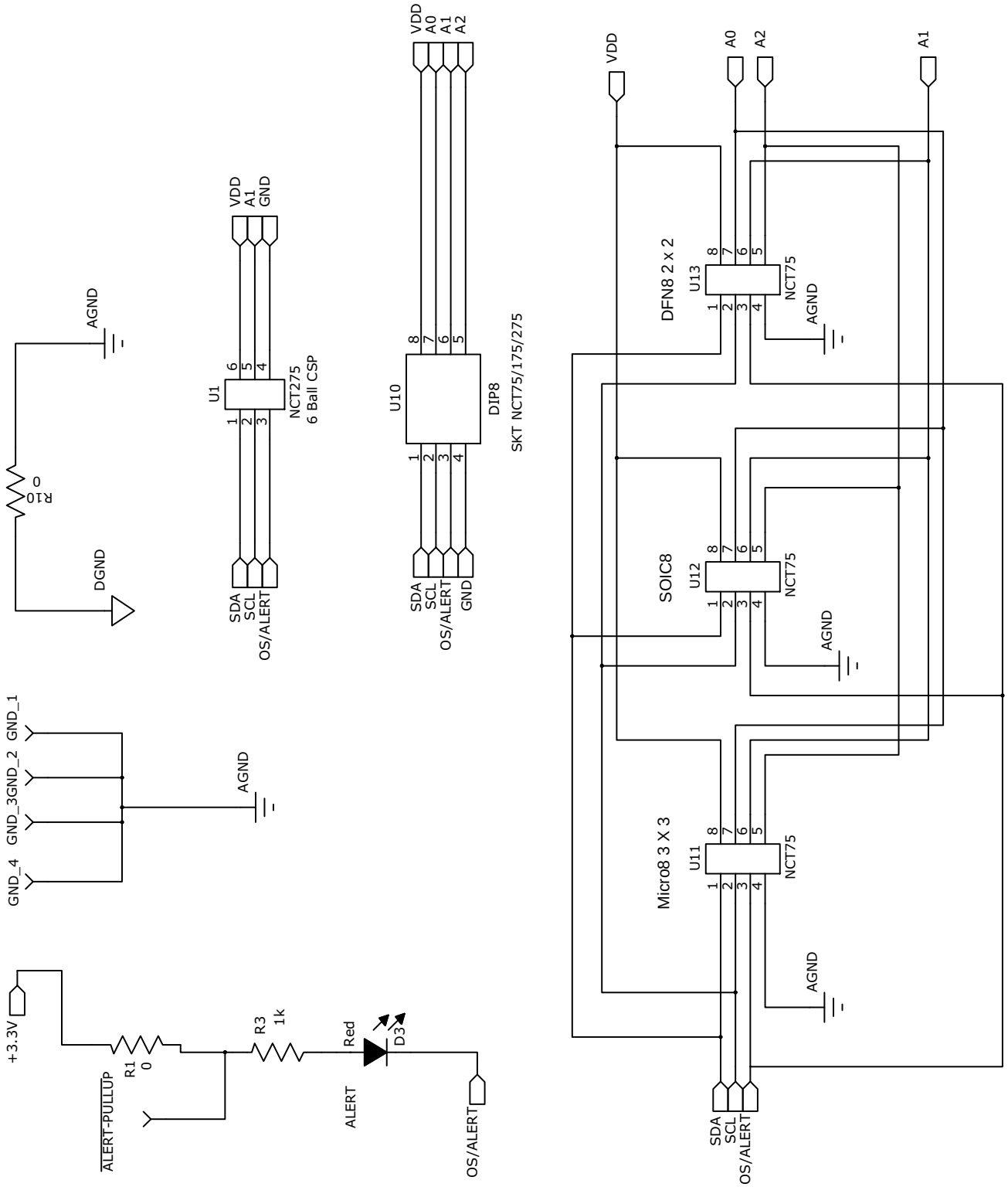

Figure 9. NCT75−175−275 Evaluation Board Schematic (1/4)

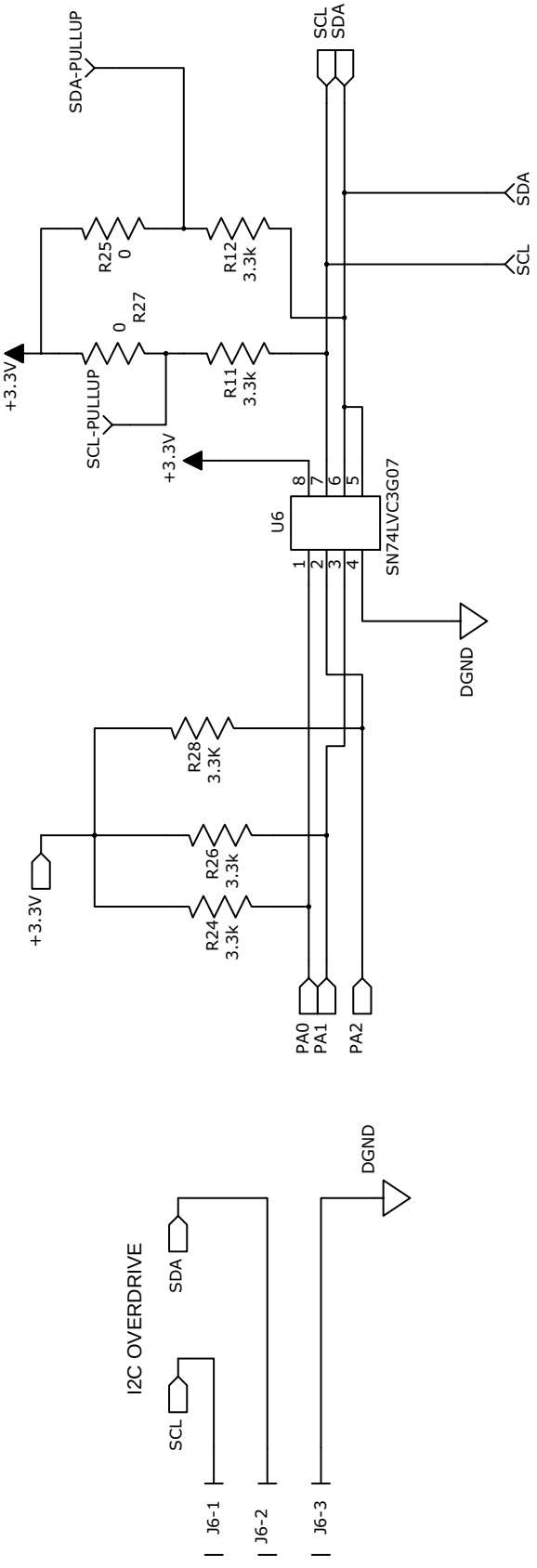

Figure 10. NCT75−175−275 Evaluation Board Schematic (2/4)

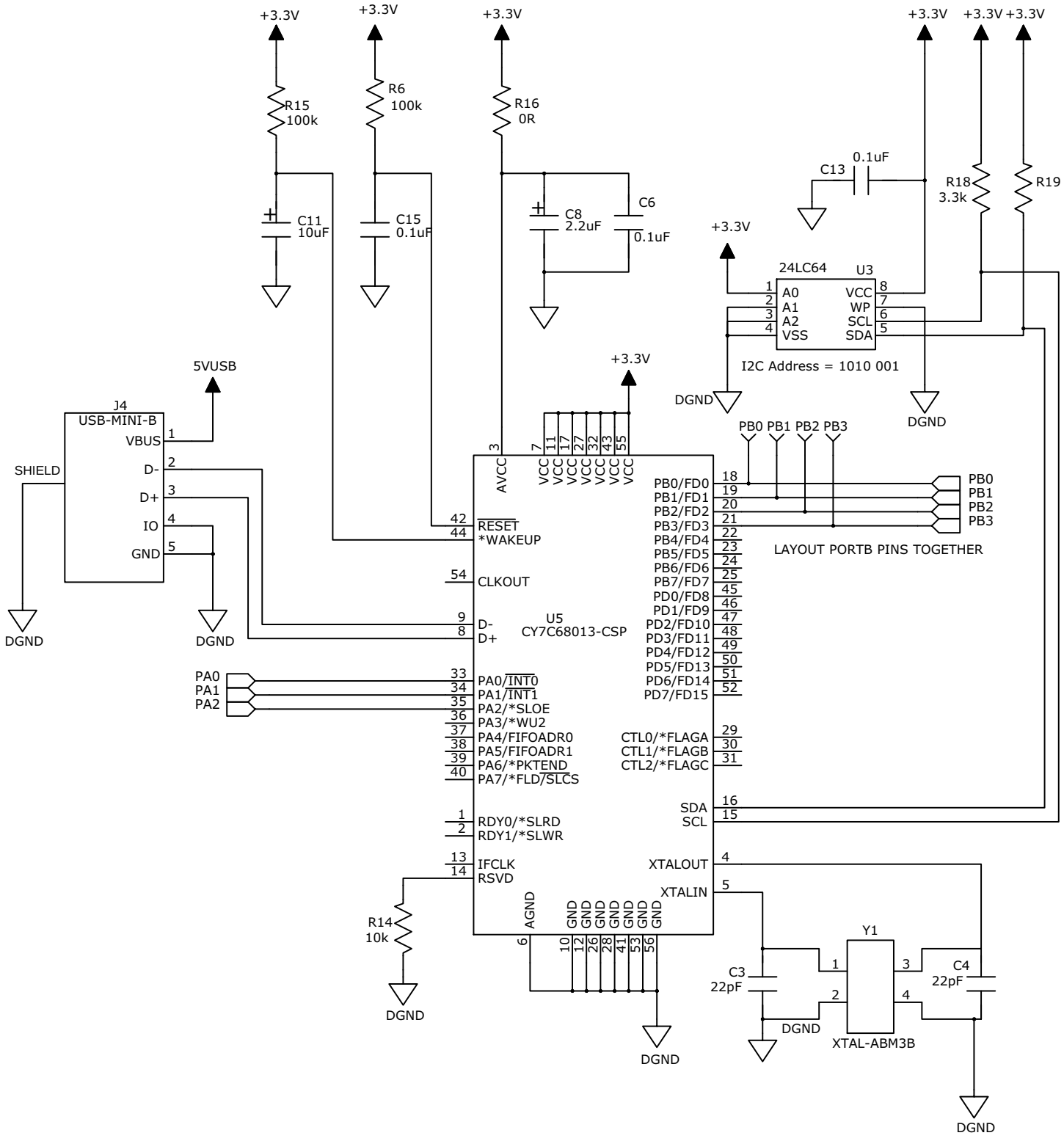

Figure 11. NCT75−175−275 Evaluation Board Schematic (3/4)

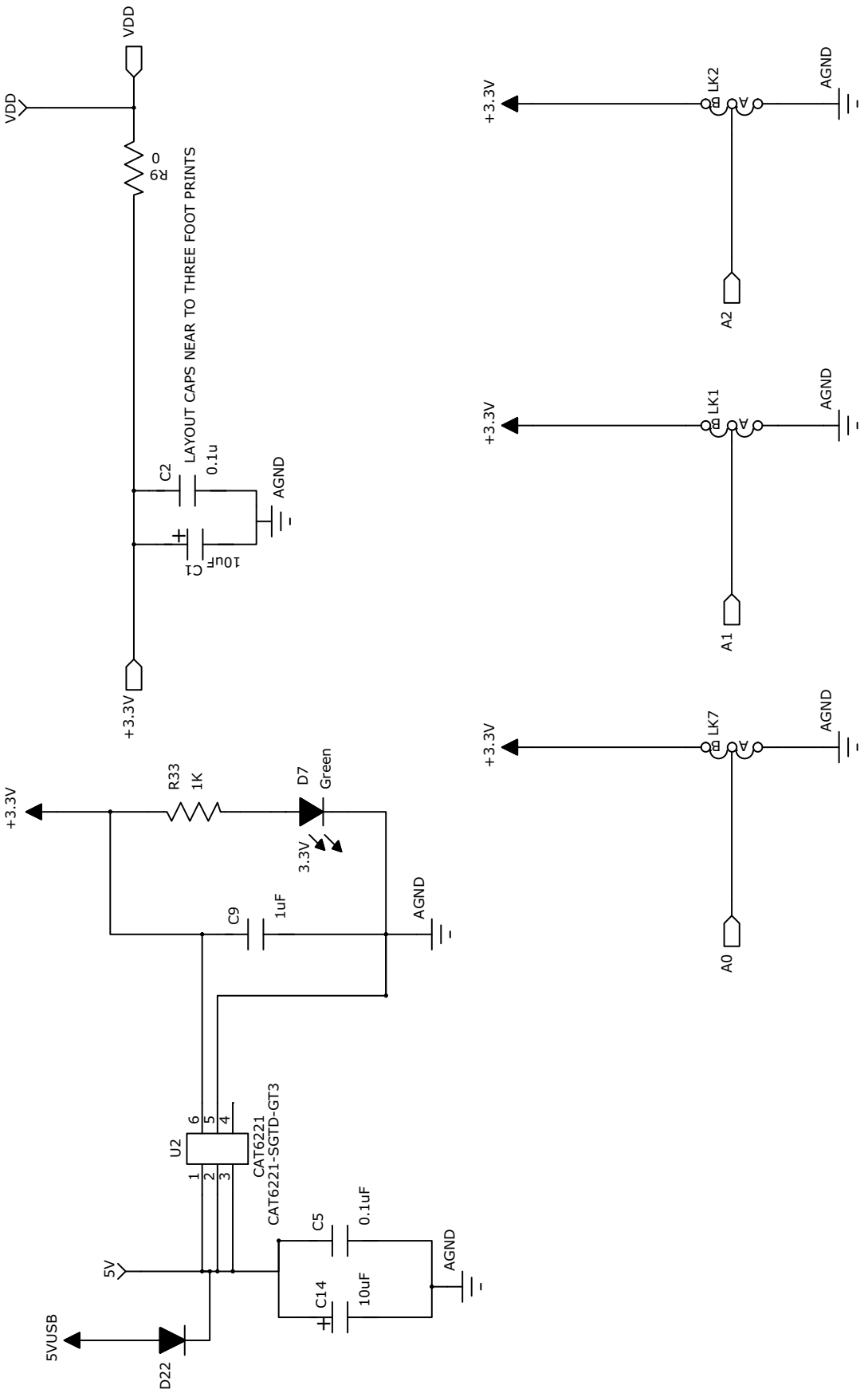

Figure 12. NCT75−175−275 Evaluation Board Schematic (4/4)

Table 4. NCT75−175−275 EVB BILL OF MATERIAL

Item	Qty	Reference	Description	PCB Decal	Stock Code
CRYSTALS					
1	1	Y1	Crystal SMD 24 MHz Abracorn Cooperation	CRY−ABM3B	535−9700−1−ND (Digi-key)
ICs					
2	1	U6	SN74LVC3G07DCTR Triple Buffer	DCT−R−PDSO−8	FEC 1601176RL
3	1	U5	USB Microcontroller (CY7C68013A−56LTXC)	LFCSP−56	Digi-key 428−2933−ND
4	1	U3	24LC64 64K I2C Serial EEPROM	SO8NB	FEC 9758070
5	1	U2	CAT6221−SFTD−GT3 300 mA Dual LDO Regulator, 3.3 V/1.5 V	TSOT−23	ON Semiconductor SUPPLIED
6	1	U13	NCT75	DFN8−2X2−0.5P	DONOT POPULATE
7	1	U12	NCT75	SO8NB	DONOT POPULATE
8	1	U11	NCT75	USOIC−8	DONOT POPULATE
9	1	U10	IC SOCKET, DIP, 8POS, 2.54MM	DIP8	FEC 1925018
10	1	U1	NCT275	WLCSP−6−0.4MM	DONOT POPULATE
RESISTORS					
11	2	R6, R15	Resistor 100 kΩ, 0603, 0.125, 1%, Multicomp	603	FEC 1576310
12	1	R33	Resistor 1 kΩ, 0805, 100 mW, 1%, Multicomp	805	FEC 9332383
13	1	R3	RESISTOR, THICK FILM, 1 kΩ, 0.125 W, 1%	603	FEC 1576283
14	1	R14	Resistor 10 kΩ, 0603, 0.125W, 1%, Multicomp	603	FEC 1576297
15	7	R11, R12 R18, R19, R24, R26, R28	Resistor 3.3 kΩ, 0603, 63 mW, 5%, Multicomp	603	FEC 9332022
16	6	R1, R9, R10, R16, R25, R27	Resistor 0R, 0603, 0.1 W, 1%, CRCW06030000Z0EA Vishay	603	FEC 1469739
LINKS					
17	3	LK1, LK2, LK7	HEADER, 1ROW, 3WAY & JUMPER 2 PIN PCB	LINK−3P	FEC 1022245 & 1654800
CONNECTORS					
18	1	J6	TERMINAL BLOCK. PCB,3.81MM, 3WAY Phoenix Contact	CON−3W−3.81MM	FEC 3704580
19	1	J4	USB Mini−B Receptacle Molex	USB−MINI−B	FEC 9786490
DIODES					
20	1	D7	HSMG−C170 − LED, GREEN, 15MCD, 572NM	805	FEC 5790852
21	1	D3	MULTICOMP − 703−0107 − LED, 0805, RED, 15MCD, 643NM,	805	FEC 2112119
22	1	D22	DIODE, SCHOTTKY, SOT−23	SOT23	FEC 9526765

Table 4. NCT75−175−275 EVB BILL OF MATERIAL (continued)

Item	Qty	Reference	Description	PCB Decal	Stock Code
CAPACITORS					
23	1	C9	CAP MLCC, 1 μF, 25 V, X5R, 10%, 0603, REEL	603	FEC−2280849
24	1	C8	CAP 2.2 μF, 10 V SMD Tantalum Capacitor	RTAJ_A	FEC 498−646
25	5	C2, C5, C6 C13, C15	CAPACITOR, 0603, 0.1 μF, 25 V Multicomp	603	FEC 9406204
26	2	C3, C4	CAP 22 pF, 50 V, SMD Ceramic Capacitor Yageo	603	FEC 722005
27	3	C1, C11, C14	CAP 10 μF, 10 V SMD Tantalum Capacitor	CAP\TAJ_A	FEC 197−130
TEST POINTS					
28	9	TERMINAL, PCB, YELLOW, PK 100 VERO		TESTPOINT	FEC 8731187
29	2	TERMINAL, PCB, RED, PK100 VERO		TEST POINT	FEC 8731144
30	5	HARWIN − M20−9990246 − HEADER, 1ROW, 2WAY		TEST POINT	FEC 1022247

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